g of compression to the lower thoracic cord for 20 minutes. More than 30 minutes later, ginsenoside Rb_1 dissolved in physiological saline was infused once into the left femoral vein (12 μ g or 60 μ g). Subsequently continuous intravenous administration of ginsenoside Rb_1 was performed for 7 days by using an Alza osmotic minipump (12 μg/day or 60 μg/day). Control animals and sham-operated animals were administered with the same amount of physiological saline (vehicle). The open field locomotor scores [Basso, Bettie and Bresnakan (BBB) scores] were measured before the loading of spinal cord injury, on the day of spinal cord injury, and from the 1st day to the 7th day after spinal cord injury in order to determine an index of motor functions (Basso D.M. et al., J. Neurotrauma, 13, 343-359, 1996). BBB scores of the sham-operated rats (normal rats) are 20 - 21.

Fig. 8A shows the result of a control rat treated with physiological saline on the 2nd day after spinal cord injury, and Fig. 8B shows the result of a rat administered with ginsenoside Rb_1 (60 μg/day) on the 2nd day after spinal cord injury. As shown in Fig. 8A, the rats to which physiological saline was administered and a compression of 20 g was loaded on the lower thoracic cord for 20 minutes exhibited obviously paraplegia in both hindlimbs. However, when ginsenoside Rb_1 (60 μg/day) was intravenously infused after loading a compression of 20 g on the lower thoracic cord for 20 minutes, the paraplegia of both hindlimbs was significantly ameliorated after 2 days,

as shown in Fig. 8B. Also the rats treated with ginsenoside Rb_1 could stand up with the aid of a holding bar.

Fig. 9 shows a graph which quantifies the motor ability of rats by using BBB scores on the 7th day after spinal cord injuries. As shown in Fig. 9, the motor ability of rats with spinal cord injuries was significantly ameliorated by the intravenous administration of ginsenoside Rb_1 in a dose-dependent manner. Data are represented as the mean ± SE. Statistical analyses were conducted by the Mann-Whitney U-test.

Solu-Medrol (methylprednisolone), which is used as a remedy for spinal cord injuries in the clinical field at a dose of 30 mg/kg, was intravenously infused into the femoral veins of rats with spinal cord injuries by using the same schedule prepared by the inventors for administering ginsenoside Rb_1. However no significant ameliorating effects on paraplegia were noted. In the Solu-Medrol-administered rats, wound healing of the dorsal skin incision was obviously delayed as compared with that of the rats administered with physiological saline. However, in the case of the ginsenoside Rb_1-administered rats, no such adverse effects were noted. This fact indicates that ginsenoside Rb_1 is superior to Solu-Medrol as a remedy for spinal cord injuries and traumatic injuries to the nervous tissues. Furthermore, the required dose of ginsenoside Rb_1 is smaller than that of Solu-Medrol. In addition, unlike Solu-Medrol, ginsenoside Rb_1 has neither an immunosuppressive action nor an

ulcer-inducing action. Consequently, ginsenoside Rb_1 is expected to be a quite safe remedy for spinal cord injuries and neuronal traumatic injuries.

Based on the present experimental results using rats with spinal cord injuries, the therapeutic effects on spinal cord injuries of the preparation for intravenous administration comprising ginsenoside Rb_1 are thought to be historically the most potent in the world. Ginsenoside Rb_1 or its metabolites can exhibit extremely potent therapeutic actions to improve the symptoms of spinal cord injuries. This supports the notion that ginsenoside Rb_1 or its metabolites can be a leading compound(s) for the treatment of spinal cord injuries or of neuronal traumatic injuries (neurotrauma).

It is well known that the nervous tissues are more vulnerable to trauma than the other peripheral tissues. The fact that a pharmaceutical composition comprising ginsenoside Rb_1 exhibits significant effects for therapy and treatment of spinal cord injuries suggests that ginsenoside Rb_1 is also effective for the treatment of traumatic injuries to the peripheral tissues.

Since the therapeutic effects of ginsenoside Rb_1 on spinal cord injuries and neuronal traumatic injuries (neurotrauma) are profound, novel pharmaceutical compounds for the treatment of spinal cord injuries can be synthesized by using ginsenoside Rb_1 or its metabolites as a leading compound(s). Further, as a